PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Thomas SCHUTZ, et al.

Docket No: Q63690

Appln. No.: 09/824,716

Group Art Unit: 2685

Confirmation No.: 1759

Examiner: NGUYEN, Thuan T.

Filed: April 04, 2001

For: METHOD OF COMBINING AT LEAST TWO RECEIVED SIGNALS OF A TELECOMMUNICATION SYSTEM

SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of $500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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Date: September 21, 2005

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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I. REAL PARTY IN INTEREST

The real party in interest is ALCATEL by virtue of an assignment executed by Thomas Schütz and Matthias Schreiner (hereinafter "Appellants") on March 7, 2001 and recorded in the U.S. Patent and Trademark Office on April 4, 2001 at Reel 011678, Frame 0277.

II. RELATED APPEALS AND INTERFERENCES

Upon information and belief, there are no other prior or pending appeals, interferences, or judicial proceedings known to Appellant, Appellant's representatives or the Assignee that may be related to, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-9 are pending (*see* Claims Appendix). These claims stand rejected and are the basis for this appeal.

IV. STATUS OF AMENDMENTS

No Amendment has been filed after the final rejection of the claims in the January 6, 2005 Office Action. Accordingly, the claims remain as presented in the Amendment filed on June 30, 2004.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to a receiver and a method for combining at least two signals of a telecommunication system (see page 1, first paragraph of the present specification). The present invention, in exemplary embodiments, uses differing combining algorithms to process and combine signals (see page 2, last paragraph). In the context of the claims, such as embodied by independent claim 7, the received signals are combined during processing by one or more of the algorithms (see Figure 1 for a depiction of this combining of the signals, and page 7, starting at the second paragraph). Alternatively, or in combination with the combining of the signals at the algorithm, the signals resulting from processing by the algorithm may also be combined, such as embodied by claims 1 and 6 (see Figure 3, and page 10, starting at the last paragraph) or one of the processed signals may be selected as a resulting signal, such as embodied in claim 9 (see Figure 2, and page 9, starting at the last paragraph).

One novel feature of the present invention, as recited in independent claims 1, 6, 7 and 9 is the use of differing algorithms (or a plurality of algorithms as recited in independent claim 8) for processing signals. The novel use of two (or more) available algorithms provides a more reliable processed signal (over the related art use of one signal) since an algorithm can be selected that is appropriate to the situation. For example, one algorithm can be adopted for use when local interference is a problem, and a second algorithm can be used for overcoming noise. In the related art, as explained on pages 2 and 3 of the present specification, only one algorithm has been used; thus creating the potential for a non-optimized combined signal.

An exemplary embodiment of the invention is depicted in Figure 1, which shows combining two received signals A, A' that are received by two antennas of a receiver of a base transceiver station (BTS) (see page 7, second paragraph). As noted, this embodiment is covered by independent claim 7.

In the right hand part of Figure 1, the two received signals A, A' are provided to an estimator D which produces a value or a set of values DI describing the actual signal condition, e.g., noise or an interferer. A subsequent compare and decision block CDB provides decision information CD depending on this information. This decision information CD includes the information on which one of two possible algorithms shall be used for combining the received signals A, A' (see page 7, third paragraph).

These two possible algorithms for combining the received signals A, A' are shown in the left hand part of Figure 1. The two arrows of the decision information CD are pointing in the direction of the two algorithms. The decision information CD is selecting only one algorithm out of these two possible algorithms (see page 7, last paragraph).

The two algorithms B1, B2 are both provided with the two received signals A, A' as an input. The first algorithm B1, if selected, creates weighting factors w11, w12 which are provided to a corresponding weighting block C1. In the weighting block C1, the two received signals A, A' are multiplied with the weighting factors w11, w12 and are then added up into a first resulting signal S1. The second algorithm B2, if selected, creates corresponding weighting factors w21, w22. Then, in a weighting block C2, a second resulting signal S2 is created (see page 8, first paragraph).

Due to the selection of only one of these two possible algorithms, only the selected algorithm is processed. The other non-selected algorithm is not processed. Therefore, only the resulting signal S1 of the first algorithm B1 or the resulting signal S2 of the second algorithm B2 is available. This resulting signal S1 or S2 is then used as the improved signal S for further processing (see page 8, second paragraph). Of course, as discussed, the resulting signals S1 and S2 may further be combined and the resultant combined signal used as the improved signal.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pelin et al. (U.S. Patent No. 5,937,014) in view of Benveniste (U.S. Patent No. 6,259,922). No other grounds of rejection or objection are pending.

VII. ARGUMENT

Rejection of claims 1-9 under 35 U.S.C. § 103(a) as being unpatentable over Pelin et al. (U.S. Patent No. 5,937,014) in view of Benveniste (U.S. Patent No. 6,259,922).

A. Pelin et al. does not disclose a method of "combining signals" as asserted by the grounds of rejection, and as such, solves a different problem than that of the present invention.

Independent claims 1 and 6-8 relate to combining a plurality of received signals. The grounds of rejection state that Pelin et al. disclose a receiver (citing Figure 1 for a base station telecommunication receiver) and its "method of combining at least two received signals of a telecommunication system" (stating that Fig. 1 shows a base communication system with two antennas 170 and 180 connected to two transceivers 150 and 160 for receiving/transmitting at least two signals). Appellants respectfully traverse the aforementioned assertion in the grounds of rejection.

In particular, Figure 1 of Pelin et al. shows base station 110 that includes traffic channel transceiver 150 and control channel transceiver 160. Traffic channel transceiver 150 handles a plurality of traffic signals, while control channel transceiver 160 is used for control purposes such as *broadcasting control information* to "mobiles" (see col. 4, lines 54-63). Because of the different use, types of signals handled, and functions of these two transceivers, one of ordinary skill in the art would not consider that the signals that are received at the traffic channel transceiver 150 and the control channel transceiver 160 would be combined, as alleged by the grounds of rejection, nor therefore would these signals be subject to the claimed processing using

combining algorithms B1 and B2. Appellants note that this argument by Appellants in the April 6, 2005 Response was not addressed in the May 20, 2005 Advisory Action.

Additionally, independent claim 9 recites a receiver for combining a plurality of signals. The grounds of rejection do not distinguish between "combining a plurality of received signals" as recited in claims 1, and 6-8, and a "combining a plurality of signals" as recited in claim 9. The grounds of rejection simply state that "as for claims 8-9, these claims with the same limitations as addressed earlier are rejected for the reasons given in the scope of claims 1-7 ..." Applicants respectfully submit for the reasons above that since one of ordinary skill in the art would not consider that the Pelin et al. signals that are received at the traffic channel transceiver 150 and the control channel transceiver 160 would be combined, that Pelin et al. would not disclose or suggest the features of claim 9 either.

B. The algorithms of Benveniste are used in a completely different manner than the claimed algorithms, and as such, one of one of ordinary skill in the art would not turn to Benveniste for its teachings.

Claims 1 and 6 recite a processing feature for combining signals using combining algorithms B1 and B2. The grounds of rejection acknowledge that Pelin et al. does not provide two distinct algorithms (differing as claimed). In this case, the grounds of rejection turn to the teachings of Benveniste. In particular, the grounds of rejection state that Benveniste teaches this limitation "as within the mixed power control technique, the combining of received signals is performed and by using different algorithms, the mixed and result[*sic*] combined signal is produced for signal quality achievement." The grounds of rejection cite col. 2, lines 39-53 and

col. 3, lines 38-51 for signal quality addressed; and col. 5, lines 1-17, col. 19, lines 38-47, and col. 23, line 60 to col. 24, line 41 for combining different algorithms. The Response to Arguments section of the May 20, 2005 Advisory Action further seems to suggest that since the Benveniste algorithms are related to improving signal quality of received signals, "they should read on the limitation of claims 1 and 6 without a doubt." Applicants respectfully traverse this assertion.

One novel feature of the present invention, as recited in claims 1 and 6, is the use of both first and second combining algorithms (e.g., B1 and B2) for combining multiple received signals into a single signal. The novel use of two (or more) available algorithms provides a more reliable combined signal (over the related art use of one signal) since an algorithm can be selected that is appropriate to the situation. For example, one algorithm can be adopted for use when local interference is a problem, and a second algorithm can be used for overcoming noise. In the related art, as explained on pages 2 and 3 of the present specification, only one algorithm has been used; thus creating the potential for a non-optimized combined signal.

Turning to Benveniste, Appellants respectfully submit that the algorithms that are disclosed therein are for an entirely different purpose than for processing signals such as they are used in the present invention. Rather, the algorithms are *channel assignment algorithms* (see col. 19, lines 16 and 39). Benveniste relates to a problem of improving the quality of communications in a wireless system by optimizing the ratio of the received signal to interference (see col. 3, lines 38-51). To do this, channel interference is reduced by, for example, avoiding neighbor channels within a cell (see col. 2, lines 54-61). Several methods of managing

neighbor-channel interference are disclosed, such as the one cited by the Examiner at cols. 23 and 24 (MPCDA). The algorithm used for MPCDA is used to define the optimum way to manage a situation of decreasing neighbor cell-distance with increased user-to-base distance. That is, the algorithm used to assign channels for a call is based on assignment of users in the cell with respect to their distance from the serving base station. As such, since the algorithms of Benveniste are used in a completely different manner than the claimed algorithms, one of ordinary skill in the art would not turn to Benveniste for its teachings for combining signals. Claim 1, as well as independent claims 6, 7, and 9 include the "differing algorithms" feature. For similar reasons, since the algorithms disclosed in Benveniste are not relevant to combining signals, the combination of Pelin et al. and Benveniste would not suggest the feature of "processing the plurality of signals with a plurality of algorithms based on the condition of the signals" as recited in independent claim 8.

C. The grounds of rejection discuss features of principles not related to the present invention and mischaracterize the claims.

Appellants note that in the Response to Arguments of the May 20, 2005 Advisory Action, the grounds of rejection refer to "doing the combination of two algorithms from received signals" and "combining the different algorithms" (see page 3, lines 1-6). Appellants respectfully submit that the present invention as claimed relates to combining signals. Algorithms are not combined. Therefore, Appellants submit that the reasoning provided in the Response to Arguments is in error.

D. The grounds of rejection improperly take the motivation for the combination of the cited art from Appellants' own specification.

The Response to Arguments provided in the May 20, 2005 Advisory Action quote from the present specification the object solved by the present invention, and state that the cited reference Benveniste is "doing the same technique in achieving or improving the signal quality..." (see page 2, third paragraph of the Advisory Action). As such, it is apparent that the grounds of rejection are improperly using the teachings of the present application, and the objects solved by the present invention related to improving signal quality for the motivation to combine the cited references. Appellants note that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

E. There is no showing of the teaching or motivation to combine prior art references provided in the Office Action.

In the May 20, 2005 Advisory Action, the Response first discusses the often cited decision *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), and acknowledges that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found in either the references themselves, or in the knowledge generally available to one of ordinary skill in the art. The grounds of rejection go on to apply this principle stating that in this case, both Pelin and Beneviste are in the "same environment of wireless communication systems related to signal quality achievement or improvement method for signal quality, which

comprising a numerous aspects in different angles for achieving this goal" (*sic*). However, asserting that both references are in the field of improving signal quality is not sufficient to provide motivation for their combination. Appellants note that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

The Board recognizes that the USPTO is held to a rigorous standard when trying to show that an invention would have been obvious in view of the combination of two or more references. See, *In re Sang Su Lee*, 61 USPQ2d 1430 (Fed. Cir. 2002), citing, e.g., *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."). In *Lee*, the Federal Circuit further emphasized that the "need for specificity pervades this authority." (*Lee* at 1433 (citing *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed")). The factual inquiry into whether to combine references "must be based on objective evidence of record." *Lee* at 1433.

In this case, for the reasons discussed above, the record indicates: a) improper hindsight in view of the present specification; b) errors in the reasoning provided in the Response related to "combining the different algorithms"; and c) motivation based on the mere fact that references

relate to improving signal quality. For any and all of these reasons, Appellants submit that a rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references as required by *Lee* has not been met. Additionally, Appellants have discussed above in sections A and B why the references themselves do not suggest the features of the present invention, let alone their combination. Accordingly, Appellants request that the rejection of claims 1-9 based on the combination of Pelin et al. and Benveniste be overturned.

F. Further Reasons for Allowance of the Dependent Claims

With respect to dependent claims 2-5, Appellants also respectfully traverse their rejections for the additional reasons that follow. Claim 2 recites that the quality of the two resulting signals is estimated. The grounds of rejection allege that this is disclosed or suggested in col. 2, lines 22-40 of Pelin et al. "as the quality of transmitted signals taken into accounts for (*sic*) DWILSP algorithm to evaluate." However, as described in Pelin et al., the "quality" that the grounds of rejection refer to is the quality of the received signal (received input) and not that of a "resulting signal" - that is, the quality of the signal after processing by the algorithm. As such, Appellants respectfully submit that claim 2 is allowable for this reason as well.

Claim 3 is allowable based on its dependency on claims 1/2 for the reasons discussed above as well as for its own features. As for claim 3, the grounds of rejection state that Pelin et al. further teach that "the estimated quality of the two resulting signals is used to weight the combination of the two resulting signals" (citing col. 2, lines 22-40 as the decoupled weighted least squares with projections (DWILSP) algorithm and the iterative least squares with projections (ILSP) algorithm is used for weighting the combination of the resulting signals

(citing col. 2, lines 22-40 for a conventional technique and as well as disclosed in Fig. 11, col. 13, line 54 to col. 14, line 33). First, Appellants submit that neither of these sections suggest weighting the combination of the two resulting signals. The grounds of rejection citation to Figure 11 shows an embodiment using DWILSP 1120 as the combiner (similar to items 820 and 920 of Figures 8 and 9, respectively). As such, the EST blocks of Figure 11 would not be suggestive of a quality after processing by the algorithm since they are logically (as shown) before the algorithm and not after. As such, claim 3 is allowable for this reason as well.

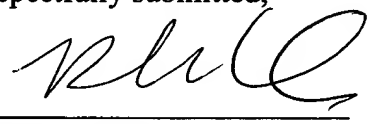
As for claim 4, the grounds of rejection allege that Pelin et al. disclose "wherein one of the two algorithm is a temporal reference algorithm and the other one of the two algorithm is a spatial reference algorithm" (citing col. 11, lines 2-28 as spatial and temporal algorithm being used). Appellants again submit that Pelin et al. does not disclose or suggest an embodiment having two differing algorithms together, and thus, the general suggestion of different algorithms being disclosed in Pelin et al. is not enough to support the rejection. Further, the grounds of rejection of claim 4 now stand contradictory to the statement provided on page 3 of the January 6, 2005 Office Action wherein Benveniste is used to make up for the lack of teaching of two algorithms in Pelin et al. Benveniste is not mentioned in the rejection with respect to claim 4.

With respect to claim 5, the grounds of rejection state that Pelin further discloses "wherein more than two algorithms is used", (citing Figs. 9-11, and col. 5, line 30 to col. 7, line 19). However, claim 5 recites that more than two *differing* algorithms are used. As such, Appellants submit that claim 5 is allowable for this reason as well.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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CLAIMS APPENDIX

CLAIMS 1-9 ON APPEAL:

1. A method of combining at least two received signals (A, A') of a telecommunication system comprising:

processing a first combining algorithm (B1) for providing a resulting signal (S1), and a second, differing combining algorithm (B2) for providing a second resulting signal (S2); and

combining the two resulting signals (S1 and S2), wherein the combination depends on the two resulting signals (S1, S2).

2. The method of claim 1, wherein a quality of the two resulting signals (S1, S2) is estimated.

3. The method of claim 2, wherein the estimated quality of the two resulting signals (S1, S2) is used to weight the combination of the two resulting signals (S1 and S2).

4. The method of one of claims 1 to 3, wherein one of the two algorithms (B1) is a temporal reference algorithm and the other one of the two algorithms (B2) is a spatial reference algorithm.

5. The method of one of claims 1 to 4, wherein more than two, differing algorithms (B1, B2) are used.

6. A receiver of a telecommunication system for combining at least two received signals (A, A') comprising:

a first combining algorithm (B1) for providing a resulting signal (S1), and a second, differing combining algorithm (B2) for providing a second resulting signal (S2); and

means for combining the two resulting signals (S1 and S2), wherein the combination depends on the two resulting signals (S1, S2).

7. A method of combining a plurality of received signals of a telecommunication system comprising:

receiving the plurality of signals;

determining the condition of the signals;

selecting from a plurality of differing algorithms, one or more algorithms to process the plurality of the signals, based on the condition of the signals; and

combining the processed signals.

8. A method of combining a plurality of received signals of a telecommunication system comprising:

receiving the plurality of signals;

determining the condition of the signals;

processing the plurality of signals with a plurality of algorithms based on the condition of the signals; and

selecting one of the processed signals as a representative resulting signal.

9. A receiver of a telecommunication system for combining a plurality of signals, comprising:

a plurality of differing algorithms;

a selector operable to select one or more of the differing algorithms to process the plurality of the signals, based on the condition of the signals; and

means for combining the processed signals or selecting one of the processed signals as a representative signal.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.